English does too have a [REVERSE,+] polarity particle![1]

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Abstract. This paper argues that the refutational use of English *too* is a polarity particle requiring a positive prejacent and a negative antecedent—that is, what Farkas and Bruce (2010) call a [REVERSE, +] particle. This places refutational *too* in a class with well-known [REVERSE, +] particles in other languages, such as French *si* and German *doch*. However, refutational *too* exhibits a property that has not been observed in previous research on polarity particles cross-linguistically: It requires the addressee to have expressed an epistemic bias against the content of its prejacent. To account for this, this paper proposes that *too* realizes a new polarity feature called [REFUTE], which presupposes that the negation of its prejacent is a member of the set of *projected addressee commitments* introduced by Malamud and Stephenson (2015). The existence of the [REFUTE] feature opens new avenues for research on the typology of polarity particles.

Keywords: polarity particles, commitment-based discourse models, question bias, tag questions, rising declaratives, additive particles.

1. Introduction

Research on English *too* has focused on its additive use, shown in (1), which is more or less synonymous with *also* and conveys that its prejacent is true in addition to a salient antecedent sentence being true.

(1) I like pizza. I like spaghetti, **too**. (Rullmann 2003)

However, *too* has another, less well-studied use, which Schwenter and Waltereit (2010) call the *refutational* use. The refutational use expresses disagreement, as shown in (2) and (3). The two uses are diachronically related, but whereas the additive use of *too* is attested in Old English, the earliest attestation of the refutational use in the *Oxford English Dictionary* is from the early twentieth century.

(2) A: You didn't do your homework!
B: I did **too**!
(Schwenter and Waltereit 2010)

(3) A: You ate all my cookies.
B: I did not!
A: You did **too**!
(Rullmann 2003)

Schwenter & Waltereit investigate the diachronic development of refutational *too* by identifying bridging contexts in which additive *too* plausibly could have been reanalyzed as refutational *too*. However, the refutational use, in contrast to the additive use, has not yet received a formal semantic analysis. In this paper, I argue that refutational *too* should be analyzed as a polarity

[1]I would like to thank Ashwini Deo for helpful feedback on this paper. I am also grateful to the OSU Pragmatics and Synners discussion groups and to audience members at *SuB 27* for thought-provoking discussion. Four anonymous abstract reviewers also provided useful comments.

particle (like *yes* and *no*), but that it possesses a property that other polarity particles have not been reported to have: It is sensitive to the epistemic bias of the addressee. Building on earlier work on polarity particles by Farkas and Bruce (2010) and Roelofsen and Farkas (2015), this paper proposes a new polarity feature, [REFUTE], to account for the behavior of refutational *too*.

I begin by reviewing some previous research on polarity particles in Section 2. The behavior of refutational *too* will then be examined in Section 3 and analyzed in Section 4. Section 5 concludes.

2. Background: Polarity Features

Early work on responses to polar questions (e.g. Pope 1976; Sadock and Zwicky 1985) noted that *yes*, *no*, and their analogues in other languages require a salient antecedent sentence and are sensitive to its polarity. In particular, *yes* can occur both in positive sentences (as in (4a) and (5b)) and in negative sentences that confirm a negative antecedent (as in (5a)), while *no* can occur both in negative sentences (as in (4b) and (5a)) and in positive sentences that deny a negative antecedent (as in (5b)).

(4) Peter passed the test.
   a. Yes, he did. / #No, he did.
   b. #Yes, he didn't. / No, he didn't.

(5) Peter didn't pass the test.
   a. Yes, he didn't. / No, he didn't.
   b. Yes, he DID. / No, he DID.

Roelofsen and Farkas (2015), refining the analysis of Farkas and Bruce (2010), take this class of particles, known as *polarity particles*, to realize two types of *polarity features*: absolute and relative. The absolute polarity features [+] and [−] presuppose that the polarity of the sentence the particle occurs in (henceforth its *prejacent*) is positive or negative, respectively. The relative polarity features [AGREE] and [REVERSE][2] presuppose that the polarity of the prejacent is the same or different, respectively, as the polarity of the antecedent. The following simplified versions of Roelofsen and Farkas's definitions of the polarity features will suffice for present purposes; the reader may consult Roelofsen and Farkas (2015) for further details.

(6) **Absolute polarity features:**
   a. [+] presupposes that its prejacent is a declarative sentence with positive polarity.
   b. [−] presupposes that its prejacent is a declarative sentence with negative polarity.

(7) **Relative polarity features:**
   a. [AGREE] presupposes that the context provides a unique most salient antecedent proposition that is equivalent to the proposition expressed by the prejacent and has the same polarity.
   b. [REVERSE] presupposes that the context provides a unique most salient antecedent proposition that is the negation of the proposition expressed by the prejacent and has the opposite polarity.

[2]Note that by calling the relative polarity features [AGREE] and [REVERSE], I am adopting the terminology of Roelofsen and Farkas (2015). Farkas and Bruce (2010) call those features [*same*] and [*reverse*].

According to Farkas and Bruce (2010) and Roelofsen and Farkas (2015), *yes* can realize [AGREE] or [+], while *no* can realize [REVERSE] or [−]. This accounts for the data in (4) and (5).

Some languages are known to have polarity particles that realize the feature combination [REVERSE, +]—that is, they occur only in positive responses to negative antecedents. The best-known examples of [REVERSE, +] particles are French *si* and German *doch*, examples of which are shown in (8) and (9), respectively.

(8) a. A: Anne n'est pas partie. 'Anne didn't leave.'
B: Mais **si**. 'You are wrong, she did.'
b. A: Anne n'est pas partie? 'Didn't Anne leave?'
B: Mais **si**. 'Yes, she did.'
(Farkas and Bruce 2010)

(9) a. A: Anna kommt nicht mit ins Kino. 'Anna isn't coming along to the movies.'
B: **Doch!** Sie kommt schon. 'You are wrong. She's coming.'
b. A: Wollen Sie den Job nicht? 'Don't you want this job?'
B: **Doch!** Ich brauche das Geld. 'But I do. I need the money.'
(Farkas and Bruce 2010)

Farkas and Bruce (2010), Roelofsen and Farkas (2015), and other authors seem to assume that English does not have a [REVERSE, +], but it will be seen in the next section that the behavior of refutational *too* challenges that assumption.

3. Data

Some naturally-occurring examples of refutational *too* found in the Corpus of Contemporary American English (COCA; Davies 2008) are shown in (10). (The speaker labels 'A' and 'B' are added for clarity.) This paper focuses on data from American English, and judgments of all constructed examples that follow were checked with speakers of American English.[3] It should be noted that refutational *too* is strongly associated with children's speech. When used by adults, it tends to sound playful or lighthearted and is not generally appropriate in formal contexts or in discussions of serious topics.

(10) a. A: You tripped me.
B: Did not.
A: Did **too**!
b. A: She doesn't know what she wants.
B: I do **too**!
c. A: Peter Pan isn't real, and people don't fly!
B: They do **too**!
d. A: No, the music [in Porgy and Bess] actually came together. I had trouble with the plot, but I guess Gershwin had nothing to do with that.
B: He did **too**!
e. A: You have never looked better.
B: I have **too** looked better.

[3]The extent to which refutational *too* is attested in other varieties of English is a question for future research. Speakers of British English in attendance at *SuB 27* report the impression that it may be a dialectal feature of American English.

f. A: We'll never fit.
B: Will **too**!
g. A: No, you can't come in.
B: Can **too**!
(COCA)

Note that although refutational *too* prototypically occurs in the elliptical construction *Do too!/Did too!*, it also occurs with other auxiliary verbs (such as *have*, *will*, and *can* in (10e–g)), and it does not require verb phrase ellipsis (as demonstrated by (10e)). Its distribution is, however, quite restricted: The clause in which it appears must be a main clause, must be declarative, and must have positive polarity. Its unacceptability in embedded clauses, interrogatives, and negative sentences is demonstrated by (11), (12), and (13), respectively.

(11) a. A: You ate all my cookies!
B: I did not!
A: I think you did (**#too**)!
b. A: People don't fly!
B: I think they do (**#too**)!

(12) A: I guess Gershwin had nothing to do with that.
B: #Did he **too**? / #Did **too** he?

(13) A: You ate all my cookies!
B: I didn't **(#too)**! / I did **(#too)** not!

In addition, refutational *too* always immediately follows an auxiliary verb. Placing it in any other position in the examples above results in unacceptability. The syntactic distribution of refutational *too* is thus quite different from that of additive *too*, which typically (though not exclusively) appears in sentence-final position, as in (1). It also differs from the distribution of the canonical English polarity particles *yes* and *no*, which typically appear in sentence-initial position. *Too*'s inability to form responses by itself without an overt prejacent, as shown in (14), also sets it apart from *yes* and *no*.[4]

(14) A: You didn't feed Fido.
B: #Too!

3.1. *Too* as a polarity particle

Notwithstanding the syntactic differences between refutational *too* and the canonical English polarity particles,[5] I claim that refutational *too* is a polarity particle because it exhibits what I take to be the two key properties of polarity particles: anaphoric reference to a salient antecedent sentence (which is either equivalent to the particle's prejacent or the negation of it) and sensitivity to the polarity of that antecedent and/or its prejacent. To see that refutational *too* does indeed require an overt antecedent, consider the dialogue in (15). Even though it is clear that A believes B did not feed Fido, B cannot use *too* to disagree with that accusation since it

[4]I will not attempt to explain *too*'s syntactic behavior here, but see Sailor (2014) for an analysis of it.
[5]Farkas and Bruce (2010) report that the Romanian polarity particle *ba* also cannot occur by itself, so that does not seem to be a property shared by polarity particles in general. It is not clear how common this property is for polarity particles cross-linguistically.

was merely implicated by A, leaving it unavailable for anaphoric reference.

(15) A: Fido looks hungry.
B: #I did too feed him!

Too's sensitivity to the polarity of its antecedent and prejacent is demonstrated in (16). As already pointed out, it requires a positive prejacent, which can be accounted for by taking it to realize the $[+]$ polarity feature. In addition, it requires a negative antecedent, which can be accounted for by taking it to simultaneously realize the [REVERSE] feature. Accordingly, *too* is licensed in a wide range of $[\text{REVERSE}, +]$ responses involving both declarative and interrogative antecedents, such as those shown in (16a), but it is never licensed in [AGREE] or $[-]$ responses, such as those in (16b–c). Refutational *too* therefore seems to be a $[\text{REVERSE}, +]$ polarity particle, just like French *si* and German *doch*.

(16) **Context:** A and B have a dog, Fido, which B is supposed to feed every day. One day, A comes home and sees Fido lying next to his empty bowl, looking hungry.

a.	(i)	**A:** You didn't feed Fido.	**B:** I did **too**!	[REVERSE,+]
	(ii)	**A:** You didn't feed Fido?	**B:** I did **too**!	[REVERSE,+]
	(iii)	**A:** Did you not feed Fido?	**B:** I did **too**!	[REVERSE,+]
b.	(i)	**A:** You fed Fido!	**B:** #I did **too**!	[AGREE, +]
	(ii)	**A:** Did you feed Fido?	**B:** #I did **too**!	[AGREE, +]
c.	(i)	**A:** You didn't feed Fido.	**B:** #I didn't **too**!	[AGREE, -]
	(ii)	**A:** You fed Fido.	**B:** #I didn't **too**!	[REVERSE,-]

3.2. *Too*'s sensitivity to addressee bias

Refutational *too* being a $[\text{REVERSE}, +]$ particle cannot be the whole story, however, as there are $[\text{REVERSE}, +]$ responses that fail to license *too*. Some examples are shown in (17a–d), where *too* is not acceptable but *yes* and *no* both are, as Farkas and Bruce's (2010) analysis predicts (though *yes* may be slightly more natural). Note that the superscripted $\uparrow$ in (17b) and (17c) indicates rising intonation on the tag question.

(17) **[REVERSE,+] responses in which *too* is not licensed**

a. **Context:** B is organizing a party and is in charge of supplying all the non-alcoholic beverages for teetotalers. A and B are going through a list of people that are invited. B has no previous belief or expectation about their drinking habits.
A: Jane and Mary do not drink.
B: OK. What about John? Does he not drink (either)? (Romero and Han 2004)
A: He does **(#too)**! / (Yes/no), he does drink. $[\text{REVERSE}, +]$

b. **Context:** A and B are exploring a spooky abandoned house when they see a door slam for no apparent reason.
A: This house isn't haunted... is it?$^{\uparrow}$
B: It is **(#too)**! / (Yes/no), it is haunted. $[\text{REVERSE}, +]$

c. **Context:** A and B are planning to go to the beach later today, but only if it's sunny. A has been working in a windowless room all day and has no idea what the weather is like. B comes in from outside.
A: I hope we can still go to the beach. It's not raining, is it?$^{\uparrow}$

B: It is **(#too)**! / (Yes/no), it is raining. [REVERSE, +]

d. **Context:** A student is giving a presentation about France.
Student: Marseille is the capital of France.
Teacher: Paris isn't the capital of France?
Student: It is **(#too)**! / (Yes/no), Paris is the capital of France. [REVERSE, +]

The *too* responses in (17) are all pragmatically odd because they seem to convey that the speaker (A in (17a), B in (17b–c), and the student in (17d)) is disagreeing with the addressee, but in fact there is no conflict between the interlocutors' discourse commitments. In (17a), A's use of *too* suggests that B believes that John does not drink, but in the given context B's utterance, a low-negation polar question, does not convey anything about B's beliefs with regard to the question of whether John drinks (see Romero and Han 2004 for discussion of such questions). In (17b), B's use of *too* suggests that B thinks that A believes the house is haunted, but the context does not provide any reason to think that A holds that belief. Rather, A's use of a tag question with rising intonation after a pause conveys that A wishes to confirm that the house is not haunted because A does not *want* the house to be haunted but suspects that it actually might be. Similarly, A's tag question in (17b) does not convey that A *believes* that it is not raining. Instead, it seems to convey that A *desires* that it not be raining so that A and B can go to the beach. In (17d), the rising declarative uttered by the teacher cannot be taken to convey that the teacher believes that Paris is not the capital of France, as the teacher can be assumed to know what city is the capital of France and therefore must have intended their utterance as a correction of the student's claim (see Farkas and Roelofsen 2017 for discussion of rising declaratives that fail to signal any bias toward their contents). By contrast, *too* is acceptable in the examples in (10) because each utterance containing *too* is a response to an assertion of the negation of *too*'s prejacent.

However, *too* does not seem to require the addressee to be fully committed to the negation of its prejacent. This is demonstrated by (16a-iii), repeated in (18), which seems to license *too* because A's question, especially when uttered in an accusatory tone, clearly conveys that A believes that B did not feed Fido.[6] However, by choosing to express the accusation as a

[6] A reviewer points out that *too* seems to be unacceptable in (i) even though it occurs in a [REVERSE, +] response and A has expressed the bias that I argue *too* requires. The oddity of (iB) seems to have something to do with the presence of an indefinite in the subject, as *too* is similarly odd in other sentences with indefinite subjects, such as (iiB), and a search in COCA does not turn up any examples of refutational *too* with indefinite subjects.

(i) A: No one fed Fido.
B: #Someone did too!

(ii) A: A dog has never been to space.
B: #A dog has too!

Interestingly, however, refutational *too* is perfectly acceptable with indefinites in the predicate of the prejacent, as demonstrated by (iii)–(vi). I must leave the question of why refutational *too* is incompatible with indefinite subjects to future work.

(iii) A: There is no dog that has been to space.
B: There is too a dog that has been to space!

(iv) A: There is no credit crunch.
B: There is too a credit crunch! (`https://economistsview.typepad.com/economistsview/2008/11/there-is-too-a.html`)

(v) A: Mary has no car.
B: She does too have a car!

(vi) A: That dog belongs to no one.

question instead of an assertion, A also conveys that they are not entirely certain that B did not feed Fido. (This choice may have a politeness motivation, as it softens the accusation somewhat.) *Too* is felicitous in B's response in spite of A's apparent uncertainty. This contrasts with (17a), which also involves a low-negation polar question but fails to license *too*. Thus the acceptability of *too* in response to low-negation polar questions seems to depend on whether the question conveys an epistemic bias toward the negative answer on the part of the speaker (see Han 1998 Romero and Han 2004, Romero 2020, Goodhue 2021 for further arguments that low negation polar questions do not require such a bias).

(18) **Context:** A and B have a dog, Fido, which B is supposed to feed every day. One day, A comes home and sees Fido lying next to his empty bowl, looking hungry.
A: Did you not feed Fido?
B: I did **too**! [REVERSE, +]

The examples in (19) provide further evidence that even a weak bias toward the negation of the prejacent is sufficient to license *too*. In (19a), A's rising-intonation tag question conveys that A believes, but is not certain, that Mary is not home. (Contrast this with the lack of bias conveyed by the tag questions in (17b) and (17c), and see Reese and Asher 2007 for discussion of the interpretation of tag questions.) In (19b), A's use of *maybe* conveys the same belief and a similar lack of certainty.[7] In both cases, *too* is perfectly acceptable in B's response even though the antecedent expresses a weaker commitment than an outright assertion would.

(19) a. **Context:** Two children, A and B, are baking a surprise for their parents one evening when they run out of sugar. Their neighbor, Mary, sometimes loans things to them. She usually works late, but B saw her get home an hour ago. A does not know this.
B: Let's see if Mary can give us some sugar.
A: (But) she isn't home, is she?$^{\uparrow}$
B: She is **too**! [REVERSE, +]

b. **Context:** A and B knock on Mary's door and there is no answer for a couple of minutes. B saw her arrive and go inside an hour ago, but A does not know that.
A: Maybe Mary isn't home.
B: She is **too**! [REVERSE, +]

What seems to distinguish *too* from other polarity particles, then, is its sensitivity to the perceived epistemic bias of the addressee: Unlike *yes* and *no*, it appears that refutational *too* can only be used by a speaker who believes the addressee to be epistemically biased toward the negation of its host sentence. I take an interlocutor to be epistemically biased toward a propo-

B: He does too belong to someone!

The same reviewer also suggests that refutational *too* is unacceptable in responses to rhetorical questions such as *Are you never going to learn?* However, I do find *too* to be acceptable in such responses if appropriate context is provided, as in (vii).

(vii) **Context:** A sees B eating a peanut butter and jelly sandwich for dinner for the third day in a row.
A: Are you never going to learn to cook?
B: I am **too**! I just haven't had time.

[7]Thanks to a reviewer for the dialogue in (19b). The reviewer actually felt *too* to be unacceptable in response to *Maybe Mary isn't home* but did not suggest any particular context for the dialogue. Several American English speakers consulted found B's response in (19b) to in fact be acceptable with the given context.

sition at a particular moment in discourse if at that moment they believe it to be more likely to be true than its negation.

As should be clear from the preceding discussion, listeners' inferences about interlocutors' biases result from a complex interplay of semantic and pragmatic factors including the literal meaning of utterances, prosody, and information available in the context. In (19a), for example, A's bias toward Mary not being home is the result of A's pre-existing knowledge that Mary is not usually home on weekday evenings and is conveyed by A's rising-intonation tag question. But rising-intonation tag questions do not give rise to this kind of bias in all contexts, as demonstrated by (17c). In (19b), A's bias has a different source, namely the fact that Mary is not answering the door. The listener infers A's bias by assuming that a person's failure to answer the door is generally credible evidence that they are not home and that A will therefore be inclined to believe that Mary is not home. But of course sentences containing *maybe* do not always indicate this kind of bias. For instance, if it has been raining for a week, a speaker who has no information about the weather forecast and utters *Maybe it will be sunny tomorrow* does not express any belief about what tomorrow's weather will be like, but rather seems to express a wish for it to be sunny tomorrow. A great deal of the research on speaker bias and commitment has been dedicated to understanding the ways in which the conventional effects of various sentence forms interact with contextual factors to license inferences about speakers' epistemic states (see e.g. Malamud and Stephenson 2015; Gunlogson 2008; Jeong 2018; Reese and Asher 2007; Rudin 2018; Goodhue 2022). For the purposes of this paper, I do not take any positions on what the conventional meaning of any particular sentence form might be. What I claim is that refutational *too* is felicitous only in contexts where the addressee can be inferred (based on their previous utterances and other contextual information) to hold an epistemic bias against *too*'s prejacent.

At this point, one might wonder whether the $[-]$ feature and the addressee bias requirement are sufficient to account for the distribution of refutational *too*, allowing the [REVERSE] feature to be left out of the analysis. After all, antecedents that have the required addressee bias tend to have negative polarity, so does the [REVERSE] feature actually rule out any antecedents that the bias requirement does not? I argue that refutational *too* does, in fact, realize [REVERSE] because it sounds unnatural in the $[\text{AGREE}, +]$ responses in (20a–b) even though the addressees in these examples have expressed the negative bias that *too* requires: In (20a), A's use of *really* conveys that A believes the house is not haunted after all, and in (20b), B's rising declarative conveys that B does not believe that Dana can bake. The fact that *too* is not acceptable with these antecedents therefore cannot be accounted for by the requirement that the addressee be epistemically biased against *too*'s prejacent; thus refutational *too* must realize [REVERSE].

(20) a. **Context:** A and B are exploring an abandoned house that a friend told them was haunted. They look for evidence of paranormal activity but don't find any.
A: Is this house really haunted?
B: It is **(#too)**! $[\text{AGREE}, +]$

b. **Context:** A and B are discussing a birthday party that they are planning to host for their friend Cameron.
A: Dana volunteered to bake the cake.
B: (Really?) Dana can bake?
A: He can **(#too)**! $[\text{AGREE}, +]$

English does too have a [REVERSE,+] polarity particle!

4. Proposal: A new polarity feature

I propose to account for refutational *too*'s sensitivity to addressee bias by introducing a new polarity feature, [REFUTE], which presupposes that the addressee is at least tentatively committed to the negation of the prejacent, in a sense to be made precise below.

Farkas and Bruce (2010) develop a pragmatic framework that treats discourse as a sequence of question and answer moves aimed at expanding the common ground, or body of information that interlocutors are jointly committed to. In doing so, they build on much previous work that represents context as a set of parameters that interlocutors have joint access to, à la Lewis's (1979) "conversational scoreboard". In their model of context, the discourse commitments of each interlocutor X are tracked by a set DC_X, similarly to earlier proposals such as Hamblin (1971) and Gunlogson (2008) that model each discourse participant's commitments separately. Following Roelofsen and Farkas (2015), I take DC_X to include all of the propositions that X has publicly committed to; then the intersection $\bigcap_X DC_X$ of the interlocutors' individual commitments is the common ground, i.e., the set of propositions to which the interlocutors are jointly committed (Stalnaker 1978).[8]

The other crucial component of context in Farkas and Bruce's model is the Table, which is a stack that defines the interlocutor's conversational goals. Discourse moves place sentences, along with their denotations, on the Table. A speaker can place a declarative on the Table in order to propose that it be added to the common ground; if the other interlocutors accept that proposal, it is added to their commitment sets. If a speaker instead places an interrogative on the Table, it serves as a Question Under Discussion that the interlocutors are expected to answer (cf. Ginzburg 1996; Roberts 2012).

I adopt this model of discourse as a starting point for the analysis, but as it stands it is not able to capture the kinds of weak bias that refutational *too* seems to be sensitive to. It would clearly be inadequate to analyze *too* as requiring the negation of its prejacent to be one of the addressee's public discourse commitments since, as shown in the preceding section, refutational *too* does not require the addressee to be *fully* committed to the negation of its prejacent. Alternatively, in view of Rudin's (2018) proposal that rising declaratives place their content on the Table without committing the speaker to anything, one might attempt to analyze refutational *too* as requiring the negation of its prejacent to be on the Table. If falling declaratives, rising declaratives, biased questions, and sentences with tag questions could all be taken to place the semantic content of their sentence radicals on the Table, then this would account for much of the behavior of refutational *too*. This cannot be right, however, because it would predict *too* to be licensed by the rising declaratives in (17d) and (20b). In order to precisely specify the presupposition of [REFUTE], then, Farkas and Bruce's 2010 framework needs to be enriched so that it can track propositions toward which interlocutors have publicly expressed a bias but not a full commitment.

This can be done by adopting Malamud and Stephenson's (2015) notion of "projected commitments". Projected commitments "represent the expected next stage of the conversation" (Malamud and Stephenson 2015: 288). As such, an interlocutor's projected commitment set includes propositions which that interlocutor believes (and therefore expects to commit to in

[8]Note that Farkas and Bruce (2010) define DC_X slightly differently, taking it to include only those commitments of X that are not shared by the other interlocutors.

the future) but wishes to delay committing to for some reason, such as uncertainty or politeness considerations. Malamud and Stephenson (2015) introduce projected commitments in order to characterize the effects of certain kinds of tag questions and rising declaratives. According to them, a speaker who utters the declarative with a rising-intonation reverse-polarity tag question in (21a) or the rising declarative in (21b) projects a commitment to the proposition that Sue likes licorice.[9]

(21) a. Sue likes licorice, doesn't she?
b. Sue likes licorice?

Malamud and Stephenson (2015) notate the set of projected commitments of an interlocutor A as DC_A^*, and they assume that the full commitments of A are also added to DC_A^* in addition to being added to the set DC_A of A's discourse commitments (so $DC_A \subseteq DC_A^*$).

In terms of projected commitments, then, the present proposal is that a particle with the [REFUTE] feature presupposes that the negation of the content of its prejacent is a member of the addressee's projected discourse commitments. The behavior of refutational *too* is then accounted for by taking it to be a [REVERSE, +, REFUTE] polarity particle, as shown in (22).

(22) **Proposal:** Refutational *too* is a polarity particle realizing the feature combination [REVERSE, +, REFUTE], where [REFUTE] is a polarity feature carrying the following presupposition: $\neg[\![\text{prejacent}]\!] \in DC_{Ad}^*$.

Though I borrow Malamud and Stephenson's (2015) notion of projected commitments, I remain agnostic toward their analysis of rising declaratives and tag questions. They propose that rising declaratives and tag questions both add a proposition to the speaker's projected commitments. However, as Farkas and Roelofsen (2017) point out, rising declaratives (such as (17d), for instance) can in fact convey a complete rejection of their contents, which suggests that the addition of a projected commitment is not a conventional effect of rising declaratives. The data in (17b) and (17c) seem to demonstrate that rising-intonation tag questions do not always give rise to projected commitments, either. I therefore do not assume any particular analysis of rising declaratives, tag questions, or any other sentence form, and the analysis proposed here does not depend on one. What I do assume is that any proposition p that a speaker publicly expresses any degree of belief in is immediately added to that speaker's projected commitment set. (And of course if the truth of p is entailed or presupposed by the speaker's utterance, then it is also added to the speaker's commitment set.)

It is worth pointing out that DC_A^* need not be limited to propositions that A sincerely believes. Conceptualizing the kind of bias that refutational *too* is sensitive to as a projected commitment allows us to abstract away from the addressee's actual doxastic state. Just as interlocutors can choose to take information for granted in conversation without actually believing it (see e.g. Stalnaker 1998), they can also make projected commitments in order to adopt biases for the purposes of the conversation that do not represent their actual beliefs.[10] For example, in (23),

[9]Note that Malamud & Stephenson also claim that, in addition to adding a proposition to the speaker's projected commitment set, rising declaratives signal the presence of a "metalinguistic issue" (see Ginzburg 2012). Fully characterizing the semantic contribution of rising declaratives lies beyond the scope of this paper, however, so I will not discuss metalinguistic issues here.

[10]Thanks to Ashwini Deo for pointing this out.

A suggests that B would not mind washing the dishes as a strategy for requesting that B wash the dishes. A thereby projects a commitment to the proposition that B does not mind washing the dishes even though A is well aware that B actually does mind. This licenses *too* in B's response even though B knows that A knows that B does not like to wash the dishes. Similarly, in (24), A projects a commitment to the proposition that B does not like cookies, which can only be interpreted as a joke since B knows that A knows that B likes cookies. Even though A cannot be taken to believe that B does not like cookies, *too* is licensed in B's response.

(23) **Context:** A is B's parent and often requires B to wash the dishes. B, a young child, hates doing the dishes and frequently complains to A about it.
A: You wouldn't mind washing these dishes, would you?
B: I would **too**!

(24) **Context:** A made cookies for B because A knows that B likes cookies. B knows that A knows that B likes cookies.
A: (teasing) I made some cookies today, but you don't like cookies, do you?
B: I do **too**!

In the literature on rising declaratives and tag questions, there are a number of other notions besides projected commitments that have been proposed to analyze the discourse effects of those sentence forms and which might offer alternative ways to model the kind of bias to which refutational *too* is sensitive. I now briefly explore two of these possibilities—Gunlogson's (2008) "contingent commitments" and Farkas and Roelofsen's (2017) set of "evidenced possibilities"—before dispensing with them in favor of projected commitments for the present analysis.

Gunlogson's (2008) contingent commitments are commitments that a speaker incurs only if the addressee makes the same commitment. In other words, they are commitments that are contingent on the addressee's ratification and will be withdrawn if the addressee does not ratify them. For example, according to her, Max's commitment to the proposition that Laura got a haircut in (25) is contingent on Laura's confirmation of that fact.

(25) **Context:** Laura has just entered the room, where Max sees her for the first time that day.
Max: You got a haircut?

Contingent commitments are similar to projected commitments in that they are more tentative that actual commitments. However, not all of the antecedents that license refutational *too* seem to give rise to contingent commitments: In (19b), A's utterance of *Maybe Mary isn't home* does not seem to be soliciting B's confirmation that Mary is not home, so it is not clear that A's suggestion that Mary is not home will be withdrawn if B does not confirm it. For example, B could respond by saying *Yeah, maybe not*, which would neither confirm nor deny that Mary is not home. This would neither result in *Mary isn't home* being added to the interlocutors' commitments nor result in A's tentative commitment being withdrawn. Instead, both interlocutors would be tentatively committed to Mary not being home, which can be modeled by taking *Mary is not home* to be a member of both interlocutors' projected commitment sets. There is no obvious way to characterize this kind of situation in terms of contingent commitments.

Farkas and Roelofsen (2017) propose yet another analysis of rising declaratives and tag ques-

tions, arguing that one of their effects is to add their contents to a set of propositions that the speaker has evidence for. Could *too* be analyzed as requiring the negation of its prejacent to be in the addressee's set of evidenced possibilities? This would make correct predictions about the dialogues in (19). According to Farkas & Roelofsen's conception of evidence, however, the context in (17d) provides evidence (namely the student's assertion) that Marseille is the capital of France (cf. Farkas and Roelofsen 2017: example 56). They thus correctly predict that rising declaratives are licensed in such contexts, which is an advantage over Malamud and Stephenson's (2015) account since rising declaratives do not give rise to projected commitments in these contexts (as discussed above). The fact that refutational *too* is not licensed in (17d) is evidence that *too* is sensitive to projected commitments, not evidenced possibilities.

5. Conclusion

This paper has argued that refutational *too* is a [REVERSE, +] polarity particle, but that it bears an additional polarity feature that has not been identified in previous work on response particles: [REFUTE], which requires the addressee to have a projected commitment to the negation of its prejacent. This raises the question of whether other languages also have [REFUTE] particles, and if so, whether [REFUTE] can be realized in other feature combinations besides [REVERSE, +, REFUTE]. Future cross-linguistic investigation can search for particles that realize the feature combinations [REVERSE, −, REFUTE], [AGREE, +, REFUTE], and [AGREE, −, REFUTE]. Some English speakers may in fact have a [REVERSE, −, REFUTE] particle: refutational *either*. Refutational *either* seems to be much less widespread among English speakers than refutational *too*, and I have no intuitions about its meaning. It has, however, been previously documented by Rullmann (2003), and naturally-occurring examples such as (26) can be found in COCA.

(26) A: It's the Callaway house. Nobody's lived there for years. It's haunted.
B: It isn't **either**! (COCA)

The existence of [REFUTE] also opens the possibility of an opposing feature, [CONFIRM], which would presuppose that its prejacent is a member of DC^{*}_{Ad}. Future work can also determine whether there are polarity particles that realize [CONFIRM] and if so, what feature combinations [CONFIRM] can occur with.

Another topic for future research is the relationship between the additive and refutational uses of *too*. One clear similarity between the two uses is the fact that they both signal that the speaker takes a previously addressed Question Under Discussion to still be open, in the additive case because they wish to add additional information relevant to the issue, and in the refutational case because they wish to reject information provided by an interlocutor (see Beaver and Clark 2008 and Theiler 2019 for QUD-based analyses of additive particles). The bridging contexts identified by Schwenter and Waltereit (2010) suggest a pathway for the reanalysis of additive *too* as a response particle. An illustrative example is shown in (27), which Schwenter and Waltereit (2010) draw from the 1871 novel *The American Baron* by James de Mille. Here *but he did too* could be interpreted either as denying *It was [...] not this one* (a refutational interpretation) or as claiming that both the Italian and the American saved A's life (an additive interpretation). Schwenter and Waltereit (2010) suggest that refutational *too* could have resulted from the reanalysis of additive *too* in this kind of context.

(27) A: The American$_j$ saved my life.
B: It was the Italian$_i$ that saved your life, you know, not this one$_j$.
A: But he$_j$ did **too**. (Schwenter and Waltereit 2010)

However, it is not clear how refutational *too* would have acquired its particular sensitivity to addressee bias (i.e., the [REFUTE] feature) through this reanalysis rather than simply becoming a [REVERSE, +] particle. Further explication of the semantic relationship between the two uses is therefore needed. Typological work can also investigate whether additive particles have a cross-linguistic tendency to develop refutational uses over time.

References

Beaver, D. I. and B. Z. Clark (2008). *Sense and Sensitivity: How Focus Determines Meaning*. Malden, MA: Blackwell.

Davies, M. (2008). The Corpus of Contemporary American English (COCA): 560 million words, 1990-present.

Farkas, D. F. and K. B. Bruce (2010). On reacting to assertions and polar questions. *Journal of Semantics 27*(1), 81–118.

Farkas, D. F. and F. Roelofsen (2017). Division of labor in the interpretation of declaratives and interrogatives. *Journal of Semantics 34*(2), 237–289.

Ginzburg, J. (1996). Dynamics and the semantics of dialogue. In J. Seligmann and D. Westerståhl (Eds.), *Logic, Language, and Computation*, Volume 1, pp. 221–237. Stanford, CA: CSLI Publications.

Ginzburg, J. (2012). *The Interactive Stance: Meaning for Conversation*. Oxford, UK: Clarendon Press.

Goodhue, D. (2021). Isn't there more than one way to bias a polar question? *Natural Language Semantics 30*(4), 379–413.

Goodhue, D. (2022). Everything that rises must converge: Toward a unified account of inquisitive and assertive rising declaratives. *Biased Questions: Experimental Results and Theoretical Modeling*, forthcoming. `https://lingbuzz.net/lingbuzz/006493`.

Gunlogson, C. (2008). A question of commitment. *Belgian Journal of Linguistics 22*, 101–136.

Hamblin, C. L. (1971). Mathematical models of dialogue. *Theoria 37*, 130–155.

Han, C.-h. (1998). *The Structure and Interpretation of Imperatives: Mood and Force in Universal Grammar*. PhD dissertation, University of Pennsylvania, Philadelphia.

Jeong, S. (2018). Intonation and sentence type conventions, two types of rising declaratives. *Journal of Semantics 35*, 305–356.

Lewis, D. (1979). Scorekeeping in a language game. *Journal of Philosophical Logic 8*, 339–359.

Malamud, S. A. and T. Stephenson (2015). Three ways to avoid commitments: Declarative force modifiers in the conversational scoreboard. *Journal of Semantics 32*, 275–311.

Pope, E. (1976). *Questions and Answers in English*. The Hague: Mouton.

Reese, B. and N. Asher (2007). Prosody and the interpretation of tag questions. *Sinn und Bedeutung 11*, 448–462.

Roberts, C. (2012). Information structure in discourse: Towards an integrated formal theory of pragmatics. *Semantics and Pragmatics 5*(6), 1–69.

Roelofsen, F. and D. F. Farkas (2015). Polarity particle responses as a window onto the interpretation of questions and assertions. *Language 91*(2), 359–414.

Romero, M. (2020). Form and function of negative, tag, and rhetorical questions. In V. Déprez and M. T. Espinal (Eds.), *The Oxford Handbook of Negation*, pp. 235–254. Oxford, UK: Oxford University Press.

Romero, M. and C.-H. Han (2004). On negative yes/no questions. *Linguistics and Philosophy 27*, 609–658.

Rudin, D. (2018). *Rising above commitment*. PhD dissertation, University of California Santa Cruz, Santa Cruz, CA.

Rullmann, H. (2003). Additive particles and polarity. *Journal of Semantics 20*(4), 329–401.

Sadock, J. M. and A. M. Zwicky (1985). Speech act distinctions in syntax. In T. Shopen (Ed.), *Clause Structure*, Volume 1 of *Language Typology and Syntactic Description*, pp. 155–196. Cambridge, UK: Cambridge University Press.

Sailor, C. (2014). *The variables of VP ellipsis*. PhD dissertation, University of California Los Angeles, Los Angeles.

Schwenter, S. and R. Waltereit (2010). Presupposition accommodation and language change. In K. Davidse, L. Vandelanotte, and H. Cuyckens (Eds.), *Subjectification, Intersubjectification, and Grammaticalization*, Volume 66 of *Topics in English Linguistics*. Berlin: De Gruyter Mouton.

Stalnaker, R. (1998). On the Representation of Context. *Journal of Logic, Language and Information 7*, 3–19.

Stalnaker, R. C. (1978). Assertion. In P. Cole (Ed.), *Syntax and Semantics*, Volume 9. New York: Academic Press.

Theiler, N. (2019). When additive particles can associate with wh-phrases. *Sinn und Bedeutung 23*(2), 345–362.